WHAT IS CLAIMED IS:

1. An apparatus for estimating a channel length, comprising:

a frequency response square computing circuit, to generate a first frequency response corresponding to a first frequency and a second frequency response corresponding to a second frequency according to a input signal, and to square the first and the second frequency response; and

an estimating circuit, to estimate the channel length according to the squares of the first frequency and the second frequency response;

wherein the input signal is transmitted in a symbol rate and the first frequency and the second frequency are 1/M and 1/N times of the symbol rate respectively, wherein M and N are in the order of 2.

2. The apparatus as claimed in claim 1, wherein the first and the second frequency response are computed through discrete Fourier Transform (DFT).

3. The apparatus as claimed in claim 1, wherein the estimating circuit further comprises a magnitude normalization circuit to normalize the squares of the first frequency and the second frequency response.

4. The apparatus as claimed in claim 1, further comprising a mapping circuit to generate a plurality of coefficients of at least one of a Decision Feedback Equalizer (DEF), an analog auto-gain controller (AGC), and a digital AGC.

5. The apparatus as claimed in claim 1, wherein the symbol rate is 125MHz.

6. The apparatus as claimed in claim 5, wherein the first frequency

is substantially 15.625 MHz and the second frequency is substantially 31.25 MHz.

7. An apparatus for estimating a channel length, comprising:

a frequency response square computing circuit, to generate a first frequency response corresponding to a first frequency and a second frequency response corresponding to a second frequency according to a input signal, and to square the first and the second frequency response;

a magnitude normalization circuit to generate a first window signal to a second window signal through normalizing the squares of the first frequency and the second frequency response receive the frequency response squares of the first frequency and the second frequency; and

a comparing circuit, to estimate the channel length according to the comparison of the first and the second window signal.

8. The apparatus as claimed in claim 7, further comprising an adjusting circuit to adjust a plurality of coefficients of at least one of a Decision Feedback Equalizer (DEF), an analog auto-gain controller (AGC), and a digital AGC.

9. The apparatus as claimed in claim 7, wherein the first and the second frequency response are computed through discrete Fourier Transform (DFT).

10. The apparatus as claimed in claim 7, wherein the symbol rate is 125MHz, the first frequency is substantially 15.625 MHz and the second frequency is substantially 31.25 MHz.

11. The apparatus as claimed in claim 7, wherein the comparing

circuit further comprises:

a ratio generate circuit to generate a ratio according to the first and the second window signal;

a ratio comparing circuit to compare the ratio with a setting value; and

an ratio adjust circuit to adjust the first and the second window signal according to the comparison of the ratio and the setting value.

12. The apparatus as claimed in claim 7, wherein a magnitude normalization circuit to generate a first window signal to a second window signal through bit-shifting predetermined k bits.

13. A method for estimating a channel length, comprising:

generating a first frequency response corresponding to a first frequency and a second frequency response corresponding to a second frequency according to a input signal;

squaring the first and the second frequency response; and

estimating the channel length according to the squares of the first frequency and the second frequency response;

wherein the input signal is transmitted in a symbol rate and the first frequency and the second frequency are 1/M and 1/N times of the symbol rate respectively, wherein M and N are in the order of 2.

14. The method as claimed in claim 13, wherein the first and the second frequency response are computed through discrete Fourier Transform (DFT).

15. The method as claimed in claim 13, wherein the method further

comprises normalizing the squares of the first frequency and the second frequency response.

16. The method as claimed in claim 13, wherein the method further comprises generating a plurality of coefficients of at least one of a Decision Feedback Equalizer (DEF), an analog auto-gain controller (AGC), and a digital AGC.

17. The method as claimed in claim 13, wherein the symbol rate is 125MHz.

18. The method as claimed in claim 17, wherein the first frequency is substantially 15.625 MHz and the second frequency is substantially 31.25 MHz.